

REMARKS/ARGUMENTS

Claims 1-43 are pending in this application. By this Amendment, the title, the specification, and claims 1, 15, 16, and 29 are amended, and claims 41-43 and Figure 10 are added. Reconsideration and withdrawal of the rejections in view of the foregoing amendments and the following remarks are respectfully requested.

I. Title

The Office Action objects to the title of the invention as not being descriptive. By this Amendment, the title is amended to read "AN ELECTRICALLY DRIVEN CONTACT IMAGING SYSTEM WITH IMPROVED IMAGING CHARACTERISTICS." Accordingly, the objection should be withdrawn.

II. Drawings

The Office Action objects to the drawings for allegedly failing to show every feature of the invention specified in the claims. In particular, the drawings are objected to for not showing a light sensing element comprising a CCD, a CMOS image sensor, a phototransistor, a position sensitive detector, a camera and a scanner.

By this Amendment, the drawings are amended include a new Figure 10. Figure 10 shows a generalized image sensor that can be a PN junction diode, a charge coupled device, a complementary metal oxide semiconductor (CMOS) sensor, a phototransistor, a position

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sensitive detector, a camera or a scanner. The specification is also amended to specifically identify new Figure 10, and to indicate that the sensor can be any of the above-listed items. Support for the drawing amendment can be found throughout the specification and drawings. No new matter is added. Applicants respectfully request approval for new Figure 10, and that the objection be withdrawn.

III. Specification

By this Amendment, the specification is amended to correct informalities and so that the specification corresponds to the drawings. No new matter is added.

IV. Claim Objection

The Office Action objects to claims 1 and 15 for informalities. In particular, claim 1 is objected to because "the electrode layer" lacks proper antecedent basis, and claim 15 is objected to because "the light sensing elements" lacks proper antecedent basis. By this Amendment, claims 1 and 15 have been amended to provide the requisite antecedent basis. Applicants respectfully request that the claim objections be withdrawn.

V. Claim Rejection 35 U.S.C. §102(e)

The Office Action rejects claims 1, 9, 10, 12-14, 16, 23, 24, 28, 29, 36, 37 and 39 under 35 U.S.C. §102(e) over U.S. Patent No. 6,002,786 to Hallibert et al. (hereinafter "Hallibert"). This rejection is respectfully traversed.

Hallibert is directed to a device for imaging prints where a cross-section of the device is shown in Figure 1. The device shown in Figure 1 includes an image sensor 26 and a color filter 28 on top of the image sensor 26. A transparent electrically insulating substrate 10 overlays the color filter 28, and a transparent electrode 12 overlays the transparent electrically insulating substrate 10. Around the perimeter of the transparent electrode 12 is a conductive frame 22. Overlaying a central portion of the transparent electrode 12 is a sensitive layer 14. Overlaying the sensitive layer 14 is a light reflecting film 30, and an opaque film 32 overlays the light reflecting film 30. A top film (not numbered) overlays the opaque film 32. Another ring of conductive material 18 surrounds the unnumbered top film layer.

The conductive frame 22 is electrically coupled to the transparent electrode layer 12. The ring of conductive material 18 at the top of the device is intended to be electrically coupled to a finger 16 or hand that is placed on the top surface of the device. An electrical field is applied to the sensitive layer 14 by applying a voltage to the conductive frame 22 and conductive ring 18. Applying a voltage to the conductive ring 18 effectively applies a voltage to the finger/hand 16. The electrical field caused by the applied voltage causes the sensitive layer to output light

in a pattern that corresponds to the fingerprint or palm print pattern of the finger/hand 16 placed on the top of the device.

Claims 1, 16 and 29 are directed to contact imaging systems that include a transparent electrode layer and a luminescence layer overlaying the transparent electrode layer. Each of these claims recite that the luminescence layer and the transparent electrode layer are configured such that an electric field can be applied between an object to be imaged and the transparent electrode layer without the need for an additional electrode overlaying the luminescence layer.

As explained above, the Hallibert device includes a transparent electrode layer 12 located underneath the sensitive layer 14, and a ring of conductive material 18 located on top of the sensitive layer 14. The ring of conductive material 18, which is intended to be contacted by a user's finger or palm, acts as an upper electrode. Thus, the Hallibert device requires both a lower and an upper electrode in order to apply an electric field to the sensitive layer. In contrast, a device as recited in claims 1, 16 and 29 does not require the second electrode located over the luminescence layer, which makes a device as recited in claims 1, 16 and 29 easier and cheaper to manufacture. In addition, a device as recited in claims 1, 16 and 29 does not have to apply any sort of voltage to a user's finger or hand in order to capture an image of a finger or hand print.

Because Hallibert fails to disclose or suggest a contact imaging system that only includes a single electrode under a luminescence layer, and wherein an electric field can be applied between an object to be imaged and a transparent electrode layer without the need for an

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additional electrode overlaying the luminescence layer, it is respectfully submitted that claims 1, 16 and 29 are allowable over Hallibert.

Claims 9, 10, 12-14, 23, 24, 28, 36, 37 and 39 are allowable over Hallibert for at least the reasons discussed above in connection with claims 1, 16 and 29, and because these claims recite additional features that are also not shown or suggested by Hallibert.

For instance, claim 12 depends from claim 1 and further recites that the luminescence layer includes a dark pigment that acts to enhance contrast. Hallibert makes no such suggestion. Claim 13 depends from claim 12 and further recites a penetrating control layer formed between said luminescence layer and said stray light shield layer, wherein said stray light shield layer includes a dark pigment, and wherein said penetrating control layer is configured to limit an amount of said dark pigment that passes from said stray light shield layer to said luminescence layer. Again, Hallibert fails to disclose or suggest the use of a penetrating control layer. Claim 14 depends from claim 13 and further recites that the stray light shield layer includes a first layer adjacent the penetrating control layer that includes said dark pigment, and a second layer overlying said first layer, wherein said second layer is configured to block exterior light. Hallibert fails to disclose or suggest these features as well.

Claim 39 depends from claim 29 and further recites a shield layer that includes a dark pigment, and a penetrating control layer located between said shield layer and said luminescence layer, wherein said penetrating control layer is configured to limit an amount of the dark pigment

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in the shield layer that migrates to the luminescence layer. As explained above, Hallibert fails to disclose or suggest such features.

It is respectfully submitted that the dependent claims are also allowable for these additional reasons.

In view of the foregoing, withdrawal of the rejection of claims 1, 9, 10, 12-14, 16, 23, 24, 28, 29, 36, 37 and 39 over Hallibert is respectfully requested.

VI. Claim Rejection 35 U.S.C. §103(a)

A. Hallibert

The Office Action rejects claims 2, 6-8, 11, 15, 20-22, 25-27, 30, 33-35, 38 and 40 under 35 U.S.C. §103(a) over Hallibert. This rejection is respectfully traversed.

For the reasons set forth above, independent claims 1, 16 and 29 are allowable over Hallibert. Accordingly, claims 2, 6-8, 11, 15, and 20-22, 25-27, 30, 33-35, 38 and 40 are allowable at least for the reasons discussed above with respect to independent claims 1, 16 and 29, from which they respectively depend, as well as for their added features. Applicants respectfully request that the rejection of claims 2, 6-8, 11, 15, 20-22, 25-27, 30, 33-35, 38 and 40 over Hallibert be withdrawn.

B. Hallibert in view of Henry

The Office Action rejects claims 3-5, 17-19, 31 and 32 under 35 U.S.C. §103(a) over Hallibert, in view of U.S. Patent No. 4,980,553 to Henry (hereinafter "Henry"). This rejection is respectfully traversed.

Claims 3-5, 17-19, 31 and 32 depend from claims 1, 16 and 29. As explained above, Hallibert fails to disclose or suggest a contact imaging system that is configured such that an electric field can be applied between an object to be imaged and a transparent electrode layer under a luminescence layer without the need for an additional electrode overlaying the luminescence layer, as recited in claims 1, 16 and 29. Henry fails to cure this deficiency of Hallibert. Accordingly, it is respectfully submitted that claims 3-5, 17-19, 31 and 32 are allowable over both Hallibert and Henry for all the reasons discussed above in connection with independent claims 1, 16 and 29. Withdrawal of the rejection of these claims is respectfully requested.

VII. New Claims 41-43

By this Amendment, claims 41-43 are added to the application. These claims are directed to contact imaging systems that includes a penetrating control layer overlaying a luminescence layer, wherein the penetrating control layer is configured to limit an amount of a substance passing through the penetrating control layer. Because none of the references of record disclose

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an imaging system having the features recited in these claims, it is respectfully submitted that claims 41-43 are allowable.

VIII. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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